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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,810	10/01/2001	Alan F. Graves	7000-469	3412
7590 10/18/2005				
Withrow & Terranova, P.L.L.C. P.O. Box 1287 Cary, NC 27512			EXAMINER WANG, QUAN ZHEN	
			ART UNIT 2633	PAPER NUMBER

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/965,810

Applicant(s)

GRAVES, ALAN F.

Examiner

Quan-Zhen Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-16 is/are allowed.
- 6) ☒ Claim(s) 17, 24-26 and 31 is/are rejected.
- 7) ☒ Claim(s) 18-23, 27-30, and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 17, 25, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (U.S. Patent Application Publication US 2002/0191247 A1) in view of Cai et al. (U.S. Patent US 6,330,383 B1).

Regarding claim 17, Lu teaches a switch for optical signals (fig. 2, combinations of switch 440 and ATT/COMP 470), comprising: a plurality of optical input ports for accepting a first plurality of optical signals (fig. 2, input to switch 440 from DEMUX 480); a plurality of optical output ports for providing a second plurality of optical signals (fig. 2, output from ATT/COMP 470 to MUX 460); a switch matrix (fig. 2, switch 440) connecting said plurality of optical input ports to said plurality of optical output ports; and a dispersion compensation subsystem (fig. 2, ATT/COMP 470) adapted to provide variable dispersion compensation to the optical signals (paragraphs 0056 and 0057, page 4). The system of Lu differs from the claimed invention in that Lu does not specifically teach that the dispersion compensation subsystem includes a dispersion discrimination. However, it is well known in the art to include a dispersion discrimination in a dispersion compensation system. For example, Cai teaches a dispersion

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compensation system includes a dispersion discrimination (fig. 10B, dispersion analyzer 1030). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a dispersion compensation subsystem with dispersion discrimination, such as the one taught by Cai, into the system of Lu in order to provide variable dispersion compensation to the signals.

The modified system of Lu and Cai further differs from the claimed invention in that Lu and Cai do not specifically teach that the dispersion discrimination and compensation subsystem is adapted to provide variable dispersion compensation to the first plurality of optical signals. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to relocate the dispersion discrimination and compensation subsystem in the modified system of Lu and Cai such that the dispersion discrimination and compensation subsystem is adapted to provide variable dispersion compensation to the first plurality of optical signals, since it has been held that rearranging parts of an-invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claims 25 and 31, Lu further teaches that the first plurality of optical signals is a WDM signal (fig. 2, signals from DEMUX 480); the switch inherently comprises a plurality of per-wavelength switching planes; the switch further comprises a plurality of wavelength division demultiplexing (WDD) devices (fig. 2, DEMUX 480); a plurality of wavelength division multiplexing (WDM) devices (fig. 2, MUX 460).

2. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (U.S. Patent Application Publication US 2002/0191247 A1) in view of Cai et al. (U.S. Patent US 6,330,383 B1) and further in view of Gloeckner et al. (U.S. Patent US 6,445,841 B1).

Regarding claim 24, the modified system of Lu and Cai differs from the claimed invention in that Lu and Cai do not specifically teach to connect a verification optical link of an optical switch to the processor. However, it is well known in the art to connect a verification optical link of an optical switch to a processor to verify the switch connections of the optical switch. For example, Gloeckner et al. disclose a path integrity verification subsystem comprising a first verification optical link (fig. 10A, the link to 1020) and a second verification optical link (fig. 10A, the link to 1010) monitoring the switching function (input and output power) of an optical switch. Therefore, it would have been obvious for one having ordinary skill in the art at the time when the invention was made to incorporate an optical switch with a verification optical link of the switch connected to a processor, as it is taught by Gloeckner, into the modified system of Lu and Cai in order to provide the information of a possible failure of the switch.

3. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (U.S. Patent Application Publication US 2002/0191247 A1) in view of Cai et al. (U.S. Patent US 6,330,383 B1) and Gloeckner et al. (U.S. Patent US 6,445,841 B1) and further in view of Novotny (U. S. Patent 6,625,341 B1).

Regarding claim 26, the modified system of Lu, Cai and Gloeckner differs from the claimed invention in that Lu, Cai, and Gloeckner do not specifically teach to use variable optical intensity controllers (VOICs) to provide equalization of optical power of plurality of data channels in their systems. However, it is well known in the art to use VOIC to equalize optical powers of plurality channels. For example, Novotny teaches to use variable optical intensity controllers (variable optical attenuator, column 6, lines 52-54) in his optical switch to result an optical switch with equalization (column 6, lines 54). Therefore, it would have been obvious for one having ordinary skill in the art at the time when the invention was made to incorporate the variable optical intensity controllers (VOICs), as it is taught by Novotny, into the modified system of Lu, Cai and Gloeckner in order to equalize optical power of the plurality of data channels.

Allowable Subject Matter

4. Claims 8-16 are allowed.
5. Claims 18-23, 27-30, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment

6. Applicant's arguments filed on 8/12/2005 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Regarding claims 17, 25, and 31, Lu discloses a switch for optical signals comprising: a plurality of optical input ports for accepting a first plurality of optical signals; a plurality of optical output ports for providing a second plurality of optical signals; a switch matrix connecting said plurality of optical input ports to said plurality of optical output ports; and a dispersion compensation subsystem adapted to provide variable dispersion compensation to the optical signals. Lu differs from the claimed invention in that Lu does not specifically teach that the dispersion compensation subsystem includes a dispersion discrimination. However, any artisan in the art would know that a dispersion discrimination is needed to provide the information such as how much the dispersion compensation is needed. Without measuring the dispersion of the signal, it is impossible to provide the right amount of dispersion compensation to optical signals in order to improve the optical signal to noise ratio and lower the error rate. As an example, Cai is cited to shown that it is well known in the art to include a dispersion discrimination in a dispersion compensation system. The motivation to include a dispersion discrimination in a dispersion compensation system is clearly taught and

suggested by Cai. One of ordinary skill in the art at the time when the invention was made would incorporate a dispersion compensation subsystem with dispersion discrimination, such as the one taught by Cai, into the system of Lu in order to measure the dispersion accumulation of the signals propagating through various optical elements and paths and provide variable dispersion compensation to the signals accordingly. In addition, Lu further teaches that the compensation block "may alternatively, or additionally, be placed at inputs to the switch". (Lu, paragraph 0056). Therefore, the motivation to combine Lu and Cai is clearly taught and suggested by the cited references and the combination of the references discloses every limitation of the claimed invention.

Regarding claim 24, the modified system of Lu and Cai differs from the claimed invention in that Lu and Cai do not specifically teach to connect a verification optical link of an optical switch to a processor. However, it is well known in the art to connect a verification optical link of an optical switch to a processor to verify the switch connections of the optical switch. As an example, Gloeckner is cited to shown that a path integrity verification subsystem comprising a first verification optical link and a second verification optical link monitoring the switching function (input and output power) of an optical switch. It would have been obvious for one having ordinary skill in the art at the time when the invention was made to incorporate an optical switch with a verification optical link of the switch that is connected to a processor, as it is taught by Gloeckner, into the modified system of Lu and Cai in order to provide the information of a possible failure of the switch.

Regarding claim 26, the modified system of Lu, Cai and Gloeckner differs from the claimed invention in that Lu, Cai, and Gloeckner do not specifically teach do not teach to use variable optical intensity controllers (VOICs) to provide equalization of optical power of plurality of data channels in their systems. However, it is well known in the art to use VOIC to equalize optical powers of plurality channels. As an example, Novotny is cited to show using VOIC to equalize optical powers of plurality channels. The motivation to combine the references is taught and suggested by the references.

In conclusion, the motivation to combine the references is taught and suggested by the references and general knowledge available, and the combination of the systems discloses every limitations of the claimed invention. Therefore, the rejection of claims 17, 24-26, and 31 still stands.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw
9/26/2005


LESLIE PASCAL
PRIMARY EXAMINER